

2-Port Ethernet Switch with PCI Interface

Description

The KSZ8842-PMQL is the industry's first 2-port switch with a PCI CPU interface. An Industrial Temperature grade part, the KSZ8842-PMQLI will also be available from Q1, 2006. The KSZ8842P is a proven, 4th generation, integrated, fully managed Layer 2 switch that is entirely compliant to IEEE802.3u standards.

The KSZ8842P can be configured as a low-latency repeater to allow for 'cut thru' in latency critical Embedded or Industrial Ethernet applications. For industrial automation applications, it runs in half-duplex mode.

The KSZ8842P offers an extensive feature set that includes tag/port-based VLAN, QoS priority management, MAC filtering function, MIB counters, and CPU control/data interfaces to effectively address both current and emerging Fast Ethernet applications.

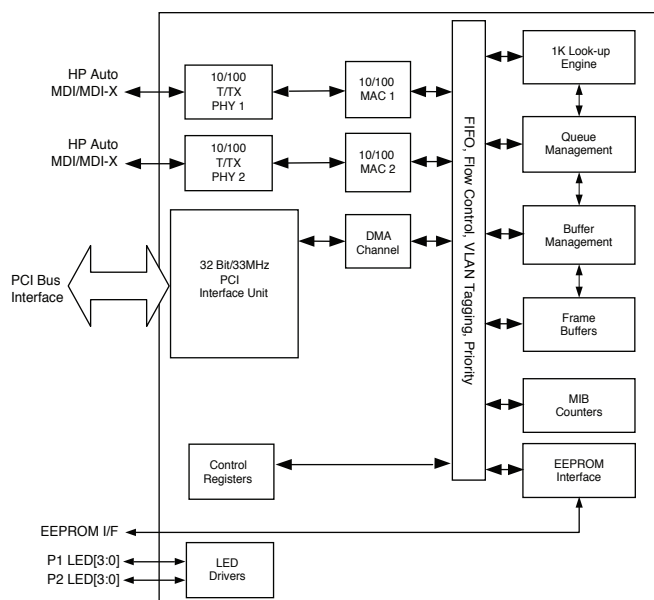
The KSZ8842P contains two 10/100 transceivers with patented mixed-signal low-power technology, two 1K entry media access control (MAC) units, a separate DMA channel, a high-speed non-blocking switch fabric, a dedicated 1K entry forwarding table, and an on-chip frame buffer memory.

Benefits

In addition to offering all of the features of an integrated Layer 2 managed switch:

- 2-port switch with 32 bit/33MHz PCI bus for different host processor interfaces
- Fully compliant to the IEEE802.3u standard
- Repeater mode capabilities to allow for 'cut-thru' in latency critical Industrial Ethernet or Embedded Ethernet applications
- Dynamic buffer memory scheme
 - Essential for applications such as Video over IP where image jitter is unacceptable
- Micrel LinkMD™ cable diagnostic capabilities to determine cable length, determine distance to fault, and to diagnose faulty cables
- HP Auto MDIX crossover with disable and enable option
- Industrial temperature support: -40°C to +85°C
- Four priority queues to handle voice, video, data, and control packets

Block Diagram



Note: For an MII/RMII, I²C or SPI interface, use the KSZ8893ML. LinkMD is a trademark of Micrel, Inc.

Features

Switch Management

- Non-blocking switch fabric assures fast packet delivery by utilizing a 1K entry
- Full-duplex IEEE 802.3x flow control (Pause) with force mode option
- Half-duplex back pressure flow control

Advanced Switch Management

- IEEE 802.1q VLAN support for up to 16 groups full-range of VLAN ID
- VLAN ID tag/untag options, per port basis
- IEEE 802.1p/q tag insertion or removal on a per port basis (egress)
- Programmable rate limiting at the ingress and egress port
- Broadcast storm protection
- IEEE 802.1d spanning tree protocol support
- MAC filtering function to filter unicast packets
- Unknown MAC address forwarding function
- Direct forwarding mode enabling the processor to identify the ingress port and to specify the egress port
- IGMP v1/v2 snooping support for multicast packet filtering

Monitoring

- Port mirroring/monitoring/sniffing: ingress and/or egress traffic to any port
- Management information base (MIB) counters for fully compliant statistics gathering: 34 MIB counters per port
- Loopback modes for remote diagnostic of failure

Comprehensive Register Access

- Control registers configurable on the fly (port-priority, 802.1p/d/q)

QoS/CoS Packets Prioritization Support

- Per port, 802.1p and DiffServ based
- Re-mapping of 802.1p priority field per port basis

Power Modes, Packaging, and Power Supplies

- Full-chip hardware power-down (register configuration not saved) provides for low power dissipation
- Per port-based software power-save on PHY (idle link detection, register configuration preserved)
- Single power supply: 3.3V
- Commercial Temperature Range: 0°C to +70°C
- Industrial Temperature Range: -40°C to +85°C (KSZ8842-PMQLI ordering code)
- Available in 128-pin PQFP

Applications

- Consumer Applications:
 - Set-Top Box • Fax • TV • Digital TV
- Video over IP
- Industrial Control in Latency Critical Applications:
 - Motion Control
- Industrial Control Sensor Devices:
 - Temperature • Pressure • Level • Valves
- Automotive Security and Surveillance

Markets

Fast Ethernet
Embedded Ethernet
Industrial Ethernet

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